What Is Claimed Is:

1. A method for dissecting a layout of an integrated circuit based on modeled intensity gradients to produce a segmentation for an optical proximity correction (OPC) process, comprising:

receiving the layout for the integrated circuit;

performing a model-based simulation on the layout to generate intensity gradients along edges of features in the layout; and

generating a segmentation for edges in the layout based upon the intensity gradients, wherein the segmentation is used by a subsequent OPC process in generating corrections for the layout.

2. The method of claim 1, wherein generating the segmentation involves:

determining segment lengths for edges in the layout based upon the intensity gradients along the edges; and

using the segment lengths to dissect the edges in the layout, thereby generating the segmentation for the layout.

3. The method of claim 2, wherein identifying a segment length for an edge involves using a predetermined association to map an intensity gradient angle (and possibly magnitude) to the segment length.

4. The method of claim 1, wherein generating the segmentation involves selecting a segmentation for a line-end in the layout from a set of predetermined line-end segmentations based upon intensity gradients associated with the line-end.

5. The method of claim 4, wherein the segmentation for the line-end is selected based upon a magnitude (and possibly angle) of an intensity gradient associated with the line-end.

6. The method of claim 1, wherein performing the model-based simulation on the layout involves:

dividing each edge in the layout into minimum-sized segments; and

performing a model-based simulation to determine an intensity gradient for each minimum-sized segment.

7. The method of claim 6, wherein determining a gradient for a given minimum-sized segment involves performing a model-based simulation at two tangential points along the segment to determine a tangential component of the gradient.

8. The method of claim 7, wherein determining the gradient for the given minimum-sized segment involves performing a model-based simulation at two points along a normal to the segment to determine a normal component of the gradient.

9. The method of claim 1, further comprising performing the dissection again on problem areas in the layout after initial OPC operations take place.

10. The method of claim 1, further comprising reducing the number of segments in areas that prove to be simpler to correct than predicted after initial OPC operations take place.

11. The method of claim 1, wherein prior to receiving the layout, the method further comprises calibrating the association between gradients and segment lengths by:

modeling an intensity gradient across a test pattern;

identifying target regions in the test pattern that have a large amount of correction shift variation;

mapping intensity gradients to the target regions;

associating segment lengths with the target regions; and

producing an association between intensity gradients and segment lengths in the target regions, whereby the association is subsequently used in generating the segmentation for the layout.

12. A computer-readable storage medium storing instructions that when executed by a computer cause the computer to perform a method for dissecting a layout of an integrated circuit based on modeled intensity gradients to produce a segmentation for an optical proximity correction (OPC) process, the method comprising:

receiving the layout for the integrated circuit;

performing a model-based simulation on the layout to generate intensity gradients along edges of features in the layout; and

generating a segmentation for edges in the layout based upon the intensity gradients, wherein the segmentation is used by a subsequent OPC process in generating corrections for the layout.

13. The computer-readable storage medium of claim 12, wherein generating the segmentation involves:

determining segment lengths for edges in the layout based upon the intensity gradients along the edges; and

using the segment lengths to dissect the edges in the layout, thereby generating the segmentation for the layout.

14. The computer-readable storage medium of claim 13, wherein identifying a segment length for an edge involves using a predetermined association to map an intensity gradient angle (and possibly magnitude) to the segment length.

15. The computer-readable storage medium of claim 12, wherein generating the segmentation involves selecting a segmentation for a line-end in the layout from a set of predetermined line-end segmentations based upon intensity gradients associated with the line-end.

16. The computer-readable storage medium of claim 15, wherein the segmentation for the line-end is selected based upon a magnitude (and possibly angle) of an intensity gradient associated with the line-end.

17. The computer-readable storage medium of claim 12, wherein performing the model-based simulation on the layout involves:

dividing each edge in the layout into minimum-sized segments; and

performing a model-based simulation to determine an intensity gradient for each minimum-sized segment.

18. The computer-readable storage medium of claim 17, wherein determining a gradient for a given minimum-sized segment involves performing a model-based simulation at two tangential points along the segment to determine a tangential component of the gradient.

19. The computer-readable storage medium of claim 18, wherein determining the gradient for the given minimum-sized segment involves performing a model-based simulation at two points along a normal to the segment to determine a normal component of the gradient.

20. The computer-readable storage medium of claim 12, wherein the method further comprises performing the dissection again on problem areas in the layout after initial OPC operations take place.

21. The computer-readable storage medium of claim 12, further comprising reducing the number of segments in areas that prove to be simpler to correct than predicted after initial OPC operations take place.

22. The computer-readable storage medium of claim 12, wherein prior to receiving the layout, the method further comprises calibrating the association between gradients and segment lengths by:

modeling an intensity gradient across a test pattern;

identifying target regions in the test pattern that have a large amount of correction shift variation;

mapping intensity gradients to the target regions;

associating segment lengths with the target regions; and producing an association between intensity gradients and segment lengths in the target regions, whereby the association is subsequently used in generating the segmentation for the layout.

23. An apparatus that dissects a layout of an integrated circuit based on modeled intensity gradients to produce a segmentation for an optical proximity correction (OPC) process, comprising: .

a receiving mechanism configured to receive the layout for the integrated circuit;

a model-based simulator configured to perform a model-based simulation on the layout to generate intensity gradients along edges of features in the layout; and

a segmentation mechanism configured to generate a segmentation for edges in the layout based upon the intensity gradients, wherein the segmentation is used by a subsequent OPC process in generating corrections for the layout.

24. The apparatus of claim 23, wherein the segmentation mechanism is configured to:

determine segment lengths for edges in the layout based upon the intensity gradients along the edges; and to

use the segment lengths to dissect the edges in the layout, thereby generating the segmentation for the layout.

25. The apparatus of claim 24, wherein while identifying a segment length for an edge, the segmentation mechanism is configured to use a predetermined association to map an intensity gradient angle (and possibly magnitude) to the segment length.

26. The apparatus of claim 23, wherein the segmentation mechanism is configured to select a segmentation for a line-end in the layout from a set of predetermined line-end segmentations based upon intensity gradients associated with the line-end.

27. The apparatus of claim 26, wherein the segmentation mechanism is configured to select the segmentation for the line-end is selected based upon a magnitude (and possibly angle) of an intensity gradient associated with the line-end.

28. The apparatus of claim 23, wherein the model-based simulator is configured to:

divide each edge in the layout into minimum-sized segments; and to

perform the model-based simulation to determine an intensity gradient for each minimum-sized segment.

29. The apparatus of claim 28, wherein while determining a gradient for a given minimum-sized segment, the model-based simulator is configured to perform a model-based simulation at two tangential points along the segment to determine a tangential component of the gradient.

30. The apparatus of claim 29, wherein while determining the gradient for the given minimum-sized segment, the model-based simulator is configured to perform a model-based simulation at two points along a normal to the segment to determine a normal component of the gradient.

31. The apparatus of claim 23, wherein the segmentation mechanism is configured to perform the dissection again on problem areas in the layout after initial OPC operations take place.

32. The apparatus of claim 23, wherein the segmentation mechanism is configured to reduce the number of segments in areas that prove to be simpler to correct than predicted after initial OPC operations take place.

33. The apparatus of claim 23, further comprising a calibration mechanism configured to:

model an intensity gradient across a test pattern;

identify target regions in the test pattern that have a large amount of correction shift variation;

map intensity gradients to the target regions;

associate segment lengths with the target regions; and to

produce an association between intensity gradients and segment lengths in the target regions, whereby the association is subsequently used in generating the segmentation for the layout.

34. An integrated circuit created through a process that dissects a layout for the integrated circuit based on modeled intensity gradients to produce a segmentation for an optical proximity correction (OPC) process, the process comprising:

receiving the layout for the integrated circuit;

performing a model-based simulation on the layout to generate intensity gradients along edges of features in the layout; and generating a segmentation for edges in the layout based upon the intensity gradients, wherein the segmentation is used by a subsequent OPC process in generating corrections for the layout.

35. A mask for use in an optical lithography process for manufacturing an integrated circuit, wherein the mask is generated through a process that dissects a layout for the integrated circuit based on modeled intensity gradients to produce a segmentation for an optical proximity correction (OPC) process, the process comprising:

receiving the layout for the integrated circuit;

performing a model-based simulation on the layout to generate intensity gradients along edges of features in the layout; and

generating a segmentation for edges in the layout based upon the intensity gradients, wherein the segmentation is used by a subsequent OPC process in generating corrections for the layout.